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Indian Standard

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दुग्ध वितरण वैन के निर्माण की संहिता

(पहला पुनरीक्षण)

Code for Construction of Milk Delivery Vans

(First Revision)

ICS 67.260

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Dairy Products and Equipment Sectional Committee, FAD 19

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Dairy Products and Equipment Sectional Committee had been approved by the Food and Agriculture Division Council.

The milk delivery vans are used to transport milk by road in sachets/bottles duly stacked in plastic crates from dairies to milk distribution centers. The vans are designed for mounting on the chassis of light commercial vehicle (LCV) or heavy commercial vehicle (HCV) depending on the capacity required. Pasteurized liquid milk packed in sachets /bottles in crates can be stored and transported at desired temperature without spoilage. The capacity and the type of the van has to be decided on the basis of quantity of milk to be transported, the distance to be covered, the weather condition and Regional Transport Authority regulations in force.

The purchaser is required to make arrangements for suitable LCV/HCV chassis required for construction of milk delivery van. Front Axle Weight (FAW), Rear Axle Weight (RAW) and Gross Vehicle Weight (GVW) details with/without driver's cabin are also required to be furnished to van body manufacturer so as final FAW, RAW and GVW shall not exceed the permissible limit of that particular vehicle.

The overall outer dimension of the delivery van mounted on the chassis shall not in any way infringe the Regional Transport Authority regulations in force time to time.

This standard was first published in 1981 and covered van body paneling as well as the structural components made from aluminium or aluminium alloy only. This first revision has been undertaken to include van body paneling and structural components made from stainless steel and mild steel apart from aluminium or aluminium alloy. The structural details of the van body, internal and external wall paneling details, painting details, extension of chassis with in permissible limit and details of accessories to be fixed have to be decided between the purchaser and the fabricator.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

CODE FOR CONSTRUCTION OF MILK DELIVERY VANS

(First Revision)

1 SCOPE

1.1 This standard covers the requirements of driver's cabin as well as insulated milk delivery van body.

1.2 This standard does not cover specifications for LCV/HCV truck chassis, its running gear, or its accessories or any part thereof.

2 REFERENCES

The standards given below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards.

IS No.	*Title*
710 : 2010	Marine plywood — Specification (*second revision*)
737 : 2008	Wrought aluminium and aluminium alloy sheet and strip for general engineering purposes — Specification (*fourth revision*)
808 : 1989	Dimensions for hot rolled steel beam, column, channel and angle sections
1079 : 2017	Hot rolled carbon steel sheet, plate and strips — Specification (*seventh revision*)
1825 : 1983	Specification for aluminium milk cans
2553 (Part 2) : 1992	Safety glass — Specification: Part 2 For road transport
3921 : 1985	Aluminium channels — Specification
6911 : 2017	Stainless steel plate, sheet and strip — Specification (*second revision*)
16440 : 2016	Stainless steel milk cans — Specification

3 GENERAL DESCRIPTION

3.1 Driver's Cabin

The body of the driver's cabin shall consist of the mild steel sheet pressed/rolled standard sections reinforced with gusset and cleats, joined together by means of welding/riveting wherever necessary. The outer paneling shall be with aluminium alloy sheet joined with riveting and the inner paneling shall be with polyvinyl chloride (PVC) coated mild steel sheet screwed on frame. The inner paneling joins shall be covered with decorative beadings. The roof shall be insulated with 50 mm thick polyurethane foam (PUF) sheet or any other equivalent or better insulating material, sandwiched between aluminium outer sheet and PVC coated inner mild steel sheet. The cabin shall have two side doors duly fitted with fixed and sliding glasses. The windshield glasses shall be secured in position with good quality weatherproof rubber lining suitably fixed to withstand shocks. The floor of the cabin shall be covered with good quality rubber mat. Adjustable driver's seat, fixed co-driver seat, a sleeper seat and all accessories as specified in the scope of supply shall be provided for comfort driving. External painting shall be as per the purchaser requirement. The driver's cabin, if all the doors and windows are closed should be waterproof.

3.2 Delivery Van

The size and the carrying capacity of the van shall be decided based on the size of the chassis made available for van making. All the six sides of the van shall be insulated with polyurethane foam (PUF) slabs or any other equivalent or better insulating material. Structure for holding the paneling and insulation slabs shall be fabricated from mild steel pressed/rolled standard sections. The outer paneling shall be fabricated from aluminium sheet and inner paneling from stainless steel 304 grade sheet. The longitudinal runners and cross beam of under frame shall be fabricated from suitable size mild steel sections duly mounted on the truck chassis with 'U' bolts. Floor of the van shall be made with good quality teak wood board in two layers sandwiched with PUF insulation and cladded with stainless steel chequered plate. The roof of the van shall have slope on both the sides to allow the rainwater to flow down. The van shall be provided with double leaf doors at the rear side hinged suitably to fully open outwards. Outer painting shall be as per the purchaser's requirement. Moisture proof light fittings shall be provided inside the cabin. The complete van body should be waterproof.

4 DRAWING

4.1 A general arrangement of the milk delivery van shall be as per Fig.1. The van manufacturer shall furnish the major dimensions based on the type of the chassis being used and capacity for which the van is designed.

4.2 Detailed fabrication and assembly drawing shall be prepared by van manufacturer following the guidelines of the code and shall be approved by the purchaser.

5 MATERIAL

5.1 Driver's Cabin

5.1.1 The frame work for front end and super structure shall be made of 2 mm thick, mild steel (*see* IS 1079) pressed/rolled standard sections reinforced with gussets and cleats joined together by means of welding/riveting/bolting wherever necessary.

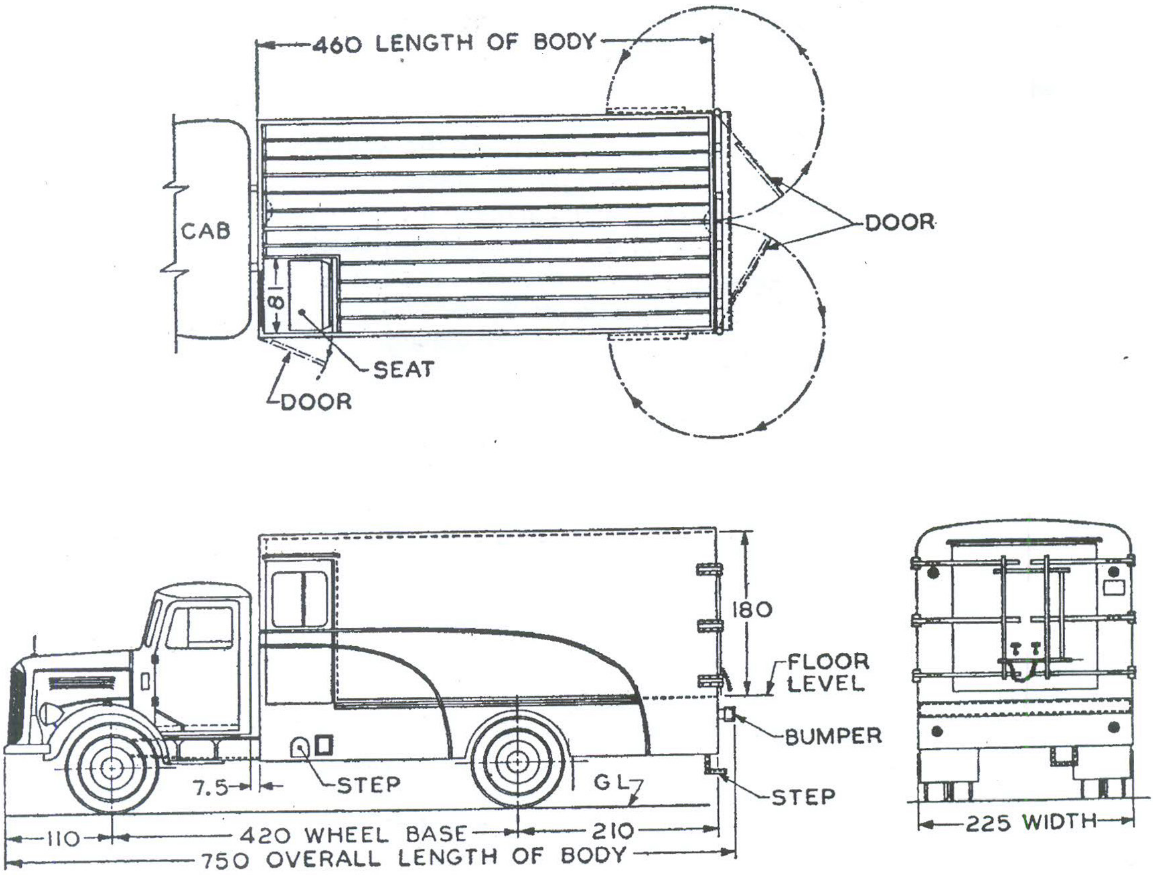
5.1.2 The outer paneling shall be of 1.25 mm thick aluminium alloy sheets confirming to 19 000, 31 000 or 51 300 and in H2 temper of IS 737 with joints at top riveted. All the joints shall be covered by decorative beadings.

5.1.3 The inner paneling shall be of 1.00 mm thick PVC coated mild steel sheet. All joints shall be overlapped, screwed with frame members and covered with decorative beadings.

5.1.4 The roof shall be insulated with 50 mm thick polyurethane foam (PUF) sheet or any other equivalent or better insulating material covered with inner paneling as above.

5.1.5 The cabin shall be provided with metal door on either side made of 2 mm thick mild steel (*see* IS 1079) pressed/rolled standard sections reinforced with gussets and cleats joined together by means of welding/riveting/bolting wherever necessary. The door shall be fixed with heavy duty chrome plated hinge. The outer and inner paneling shall be as per clause **5.1.2** and **5.1.3**, respectively.

5.1.6 Good quality glasses [*see* IS 2553 (Part 2)] for the doors and windows on either side, well secured in



All dimensions in Centimetres.

FIG. 1 MILK DELIVERY VAN

aluminium channel (*see* IS 3921) for slide glass and fixed wind shield glass secured in good quality weather proof rubber lining.

5.1.7 *Accessories*

5.1.7.1 Lockable type chromium plated handles on both the doors.

5.1.7.2 Inner and outer lock on door window.

5.1.7.3 Metal clamps to hold rubber lining for fixing windshield glass.

5.1.7.4 Good quality weatherproof rubber pads, wooden packing and 'U' clamps for mounting of cabin on chassis.

5.1.7.5 One additional push bottom for electric horn on cabin dashboard, parallel to one already provided by chassis manufacturer.

5.1.7.6 Good quality rubber mats for floor.

5.1.7.7 Fixed type quarter glass on either side.

5.1.7.8 One peep window on left side at floor level.

5.1.7.9 Two convex type rear view mirror located on front pillars with swiveling facilities.

5.1.7.10 Adjustable driver's seat for adjustment of to and fro and up and down movement of seat, with suitable reinforcement on cabin floor for mounting the seat.

5.1.7.11 Fixed co-driver's seat with suitable reinforcement on cabin floor for mounting the seat.

5.1.7.12 Sleeper seat behind the driver's seat suitable for single person complete with U-foam cushion covered with suitable cover.

5.1.7.13 Two numbers windshield glass wiper complete with motor.

5.1.7.14 Two numbers adjustable ventilators in front at knee level.

5.1.7.15 Suitable footstep with swinging arrangement to climb in to the cabin.

5.1.7.16 One rub rail shall be provided at the skirt level on each side on outer paneling to protect the panel from minor damages.

5.1.7.17 A battery cradle 100 mm above the cabin floor level with suitable clamping arrangement.

5.1.7.18 Drain holes in floor at suitable location.

5.1.7.19 One bulb horn assembly.

5.1.7.20 Two numbers reversing light, traficator stoplight and roof light fittings.

5.1.7.21 Toolbox below sleeper seat.

5.1.7.22 Mudguards on front and rear wheels with rubber flaps and earthing metallic chain.

5.1.7.23 Two numbers metal pouches for keeping logbook and papers.

5.1.7.24 One fire extinguisher fixed on rear wall.

5.1.8 *Painting*

The outer metal surface shall be thoroughly cleaned and coated with two coats of anti corrosive epoxy primer followed by two coats of mutually agreed approved shade automotive paint. Floor of the cabin shall be cleaned thoroughly from both sides and applied two coats of anti corrosive primer followed by two coats of rubber paint.

5.2 Milk Delivery Van

5.2.1 Main structure, floor structure, under frame, pillars for rear end doors etc. shall be of suitable size mild steel structure member depending upon the size and capacity of the van. The frame work for front/rear end and super structure shall be made of 2 mm mild steel (*see* IS 1079) pressed/rolled standard sections reinforced with gussets and cleats joined together by means of welding/riveting/bolting wherever necessary.

5.2.2 The exterior sides and roof shall be paneled with 2 mm thick aluminium alloy sheet confirming to 19 000, 31 000 or 51 300 and in H2 temper of IS 737. All joints shall be over lapped and riveted and covered with aluminium molding.

5.2.3 The interior sides and interior roof paneling shall be with minimum 1.2 mm stainless steel having chromium

(Cr) 18-20 percent and nickel (Ni) 8-10 percent conforming to ISS 304 (equivalent to AISI 304) grade stainless steel as per IS 6911 with over lapped joints duly fixed with stainless steel screw/pull rivets.

5.2.4 Floor of the van shall be made with good quality minimum 19 mm marine plywood board (*see* IS 710) followed with 40 mm thick PUF insulation or any other equivalent or better insulating material and minimum 4 mm thick marine plywood (*see* IS 710). Floor inner paneling shall be with minimum 2 mm thick stainless steel having Cr 18-20 percent and Ni 8-10 percent conforming to ISS 304 (equivalent to AISI 304) grade stainless steel chequered sheet as per IS 6911 and outer paneling with 2 mm thick aluminium alloy sheet 19 000, 31 000 or 51 300 and in H2 temper of IS 737.

5.2.5 All four sides and roof shall be insulated with minimum 40 mm PUF sheet or any other equivalent or better insulating material sandwiched between good quality marine plywood (*see* IS 710) of thickness 4 mm.

5.2.6 Two numbers door mounted on heavy duty hinges having outward opening at 270°, insulation and paneling similar to sides. The frame of the door shall be of suitable mild steel sections.

5.2.7 A rear bumper fabricated from mild steel Indian Standard Medium Weight channel (ISMC) 150 x 75 shall be fixed at the rear end of the van body (*see* IS 808).

5.2.8 *Accessories*

Types, sizes, makes etc. of the all accessories shall be on mutually agreed terms.

5.2.8.1 Railing shall be provided inside of the van on three sides with galvanized iron (GI) 'B' class 38 mm nominal bore (NB) pipe.

5.2.8.2 All electrical wiring inside the van shall be through conduit.

5.2.8.3 Two numbers moisture proof roof light fitting.

5.2.8.4 Holding steps for entering in to the van.

5.2.8.5 Two numbers grab handle.

5.2.8.6 Rear mudguard with earthing chain and rubber flap.

5.2.8.7 Two drain holes with plug at suitable location.

5.2.8.8 Rub rail on both side of the van.

5.2.8.9 Door handle lock

5.2.9 *Painting*

5.2.9.1 The outer metal surface shall be thoroughly cleaned and coated with two coats of anti corrosive epoxy primer followed by two coats of mutually agreed approved shade automotive paint. Floor of the van shall be cleaned thoroughly from outside and applied two coats of anti corrosive primer followed by two coats of rubber paint.

5.2.9.2 All the mild steel parts of the driver's cabin and milk van shall be painted with anti-corrosive primer before these shall be fitted.

5.2.10 The interior of the milk delivery van should be fabricated in such a way to facilitate its cleaning daily/periodically.

6 SHAPE

The general shape of the body of the van shall be rectangular with flat sides and slightly curved roof with double leaf doors at the rear side hinged suitably to fully open outwards.

7 DIMENSIONS

7.1 The overall dimensions of the cabin and milk van depends on the type of chassis provided and shall be in accordance with the prevailing *Motor Vehicle Rules*. In order to fully utilize the available brake horse power of the chassis engine and permissible axle-loading configuration, overhang of the van body may be considered with in the allowable limit of prevailing Motor Vehicle Rules.

7.2 In any case the total length of the chassis supplied by the chassis manufacturer should not be cut to suit the van requirement. This act may lead to cancellation of guarantee clause in force given by the chassis manufacturer for any new chassis.

8 LOAD DISTRIBUTION

8.1 Following load distribution details shall be given by the supplier:

Type and Model of Chassis and Designed Capacity in kg

Sl No.	Weighment Condition	Front Axle Weight (FAW) in kgs	Rear Axle Weight (RAW) in kgs	Gross Vehicle Weight (GVW) in kgs
(1)	(2)	(3)	(4)	(5)
i)	Unladden weight of the chassis and standard accessories			
ii)	Unladden weight of chassis with driver's cabin, crew and standard accessories			
iii)	Unladden weight of chassis with driver's cabin, milk delivery van, crew and standard accessories			
iv)	Laden weight of chassis, driver's cabin, milk delivery van, crew, standard accessories and rated quantity of milk loaded in the van			

9 MARKING

The van shall be marked legibly and permanently with the following particulars:

a) Manufacturer's name, trade-mark or initials;
b) Manufacturer's identification;
c) Maximum carrying capacity of the van;
d) Statutory marking on driver's cabin as per the prevailing motor vehicle act with regard to FAW, RAW, GVW etc.; and
e) Other marking, if any.

10 STATUTORY APPROVAL

Approval of the design of driver's cabin and the milk van with regard to the overall dimensions, loading on front and rear axle, gross vehicle weight and other requirement as per the prevailing *Motor Vehicle Act* shall be responsibility of the supplier.

11 TEST

11.1 Driver's Cabin

11.1.1 *Rain Water Leak Test*

Cabin with all doors and windows in closed condition when stand beneath the artificial rain water test station, should not show any profuse leakage inside the cabin from doors, windows, window glasses, wind shield glass or any panel joints. The test station should sprinkle the water from the top such that it resembles the natural rain pattern. There should not be water stagnation on the top roof.

11.1.2 *Paint Adherence Test*

Dry painted surface of the outer panel when applied with an adhesive tap and pulled smoothly should not show any peeling of the paint layer.

11.1.3 *Paint Thickness Test*

When the dry film thickness is measured at different sections, should not be less than 100 micron.

11.2 Milk Delivery Van

11.2.1 *Rainwater Leak Test*

Van with all doors in closed condition when stand beneath the testing station should not show any leakage inside the van from doors or any panel joints. The test station should sprinkle the water from the top such that it resembles the natural rain pattern. There should not be water stagnation on the top roof.

11.2.2 *Paint Thickness Test*

When the dry film thickness is measured at different sections, should not be less than 100 micron.

11.2.3 *Carrying Capacity Test*

The van shall be loaded with the rated quantity of the milk crates to check whether the designed quantity can be comfortably accommodated in the van.

11.2.4 *Road Test*

Shall be conducted in accordance of the prevailing *Motor Vehicle Act*. However for a particular type and model of the chassis, the condition 4 of the clause **8** above should not exceed the limits for which the chassis is designed and given by chassis manufacturer.

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

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Amendments Issued Since Publication

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